

REMARKS

The Examiner objects to Figures 1 and 2 because these figures are not marked as "Prior Art," and objects to claims 15 and 30 because of typographical errors. In addition, the Examiner rejects claims 37 – 40 under 35 U.S.C. §112, 2nd paragraph as indefinite. In response, Applicant submits replacement sheets for Figures 1, 2, and 4. The amendments to Figures 1 and 2 add the label "Prior Art" and the amendments to Figure 4 illustrate that the equalizer 502 may optionally comprise a demodulator 502A and a differential decoder 502B. Support for the changes to Figure 4 may be found on page 11, lines 1 – 14. Applicant also amends the first paragraph on page 11 to correspond to the changes made to Figure 4, and amends claims 15 and 30 to correct the typographical errors noted by the Examiner. No new matter is added. In view of these amendments, Applicant respectfully requests that the Examiner reconsider the objections and the §112 rejections.

The Examiner rejected independent claims 1 and 25 under §103 as obvious over Seshadri (U.S. Patent No. 5,289,501) in view of Ho (U.S. Patent No. 6,072,770). Even if, *arguendo*, there is motivation to combine Ho with Seshadri, the combination does not teach the claimed invention. Seshadri teaches separating an input data stream into sub-streams, where each sub-stream has a different level of importance, and using a multi-level encoder 120 to independently encode each sub-stream using a different level of encoding. As described by Seshadri, the most important sub-stream receives the greatest level of error protection, while the second and third most important sub-streams receive the second and third greatest levels of error protection, respectively (column 8, line 66 through column 9, line 2). However, nothing in Seshadri teaches or even suggests differentially encoding a protected bit of an input symbol with respect to a less protected bit of a previous symbol, as required by claims 1 and 25.

Ho teaches a form of DPSK modulation. The Examiner asserts that the DPSK modulation technique taught by Ho anticipates the differential coding step of claim 1 and the

differential coder of claim 25. However, the claimed invention has nothing to do with DPSK modulation. Instead, the claimed invention explicitly requires differentially coding one or more bits of a first input symbol with respect to one or more bits from one or more previous input symbols. In direct contrast, DPSK generates mapped symbols by mapping groups of coded bits to a predetermined constellation, and differentially encodes a phase of a mapped symbol by determining a phase for a current mapped symbol based on the phase of a previous mapped symbol. Because differentially encoding the phase of mapped symbols is wholly different from differentially encoding bits of different transmit symbols, conventional DPSK techniques, such as those taught by Ho, have nothing to do with the claimed differential encoding process (claim 1) or the claimed differential encoder (claim 25).

In addition, there is nothing in either Seshadri or Ho that teaches or suggests differentially encoding a protected bit of one input symbol with respect to a less protected bit of a previous input symbol. At best, the combination teaches generating different encoded sub-streams, where each sub-stream has a different level of encoding, and modulating each sub-stream using a DPSK modulation process. While DPSK processes use phase information from a previous mapped symbol, this does not suggest using phase information from a mapped symbol associated with a different sub-stream. Instead, this combination simply suggests differentially encoding the phase of a symbol from a mapped sub-stream based on a phase of a previous symbol associated with the same sub-stream.

For at least these reasons, neither Seshadri nor Ho, alone or in combination, teach each and every limitation of independent claims 1 and 25. Because independent claims 1 and 25 are patentably distinct, dependent claims 5 – 12 and 29 – 35 are necessarily patentably distinct. As such, Applicant respectfully requests reconsideration.

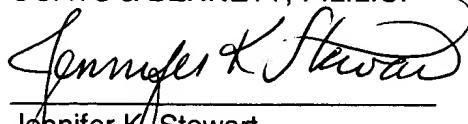
The Examiner also rejected independent claims 13 and 36 under §103 as obvious over Seshadri in view of Ho and further in view of Khaled (U.S. Patent No. 5,416,804). Independent

claims 13 and 36 claim a receiving process and a receiver, respectively, that use differential decoding to retrieve differentially coded data. As discussed above, Seshadri teaches encoding sub-streams having different levels of importance using different levels of encoding. Seshadri also describes a corresponding receiver that decodes the received signal using three different levels of decoding to re-create the three different sub-streams (Figure 2 and column 12, lines 28 – 54). Further, Ho describes a receiver that uses a reverse DPSK process to demodulate received signals (Figure 2). Therefore, for substantially the same reasons presented above, nothing in Seshadri or Ho teaches or suggests the differential decoding process of claim 13 or the differential decoder of claim 36. In addition, nothing in Khaled solves this deficiency. In fact, the Examiner simply uses Khaled as a multi-pass demodulator reference. Because neither Seshadri nor Ho nor Khaled, alone or in combination, teach or suggest the differential decoding process and apparatus as claimed in independent claims 13 and 36, claims 13 and 36 and dependent claims 15, 18 – 24, 37 – 40, and 43 are patentably distinct from the cited art.

In view of the above remarks and the enclosed amendments, Applicant submits that the claims satisfy all §112, §102, and §103 requirements. As such, Applicant respectfully requests that the Examiner reconsider the rejections and allow the application to move forward to allowance. Should any issues remain, Applicant requests that the Examiner call the undersigned so that such issues may be resolved expeditiously.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.



Jennifer K. Stewart
Registration No.: 53,639
P.O. Box 5
Raleigh, NC 27602
Telephone: (919) 854-1844
Facsimile: (919) 854-2084

Dated: 21 September 2005